DOCUMENT RESUME

ED 301 239 JC 880 528

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TITLE Report of the Professional Concerns Subcommittee of the AMATYC Education Committee. Results of the Professional Concerns Questionnaire.
INSTITUTION American Mathematical Association of Two-Year Colleges.
PUB DATE 19 May 88
NOTE 31p.
PUB TYPE Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Administrator Attitudes; *College Mathematics; Community Colleges; Department Heads; Employment Patterns; *Full Time Faculty; Mathematics Education; *Mathematics Teachers; National Surveys; *Part Time Faculty; Questionnaires; *Teacher Qualifications; Teacher Retirement; Teacher Shortage; *Teacher Supply and Demand; Two Year Colleges

ABSTRACT

In February 1986, the Professional Concerns Subcommittee of the American Mathematical Association of Two-Year Colleges (AMATYC) conducted a survey to assess the availability and preparation of two-year college mathematics faculty. Questionnaires were distributed to mathematics chairs at 950 two-year colleges nationwide, requesting information on the department's hiring history and practices, the characteristics of faculty members who had left the college recently, qualifications for adjunct faculty, opinions concerning the existence of a shortage of qualified faculty, effects of hiring increasing proportions of part-time faculty, the educational background of current faculty, the most important areas of preparation for faculty, and professional development needs. Study findings, based on responses from 200 department heads, included the following: (1) the number of mathematics faculty employed in two-year colleges between fall 1984 and 1985 remained generally stable, although there was a slight increase in the number of full-time faculty; (2) although colleges did not report any severe difficulties in finding qualified individuals for their full-time positions, respondents perceived no surplus of candidates; and (3) data and opinion seemed to indicate that there was a shortage of qualified part-time personnel, and many colleges were opting to hire less than qualified applicants for some positions. The questionnaire is appended. (AAZC)

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ED3012239

MAY 19, 1988

# REPORT OF THE PROFESSIONAL CONCERNS SUBCOMMITTEE OF THE AMATYC EDUCATION COMMITTEE

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# RESULTS OF THE PROFESSIONAL CONCERNS QUESTIONNAIRE

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## Methodology and Sample

In February 1986, the Professional Concerns Subcommittee distributed a questionnaire (see Appendix A) to Mathematics Department chairs at two-year colleges across the country. The intent of the survey was: a) to determine if there is a shortage of qualified two-year college mathematics faculty, b) to determine the preparation of two-year college mathematics faculty, and c) to collect baseline data for future investigations concerning a) and b). Questions were designed to elicit information regarding hiring practices as well as opinions regarding faculty staffing needs.

More than 200 colleges responded out of 950 colleges surveyed, resulting in a response rate of about 25%. The respondents represented 44 states with an even distribution of location of institutions. See Table 1 below.

Table 1

*Responding Institutions: Location by Size of Institution*

| *Size* | *Location* | | | | | |
|---|---|---|---|---|---|---|
| | Urban | Suburban | Rural | Other | Not Available | Row Total |
| 1 - 199 | | | 2 | | | 2 (1%) |
| 200 - 499 | 4 | 2 | 9 | | | 15 (6%) |
| 500 - 999 | 8 | 2 | 22 | 1 | | 33 (14%) |
| 1,000 - 1,499 | 8 | 6 | 12 | 3 | | 29 (12%) |
| 1,500 - 2,999 | 6 | 16 | 17 | | | 39 (17%) |
| 3,000 - 3,999 | 8 | 5 | 7 | | | 20 (9%) |
| 4,000 - 4,999 | 3 | 6 | | 1 | | 10 (4%) |
| 5,000 - 6,999 | 7 | 9 | 3 | 1 | | 20 (9%) |
| 7,000 - 9,999 | 9 | 11 | | | | 20 (9%) |
| 10,000 & up | 11 | 16 | 3 | | 1 | 31 (13%) |
| Not Available | 6 | 6 | 5 | | | 17 (7%) |
| Column Total | 70 | 79 | 80 | 6 | 1 | 236 (100%) |
| | (30%) | (34%) | (34%) | (3%) | (< 1%) | |

Adjusting for no responses in certain categories, the distribution of responding institutions by size is summarized as follows: 21% of the respondents were from institutions with student populations below 1000, 42% between 1000 and 4999 students, 18% between 5000 and 9999 students, 11% between 10,000 and 20,000 students, and 3% had over 20,000 students. Responses from urban, suburban, and rural institutions were divided evenly (about 30 - 35 percent each). Eighty-nine percent of the responding institutions were public, while 8% were private.

# Questionnaire Results

This analysis of the questionnaire results is organized by viewing the data categorized by the following four areas: 1) General Information, 2) The Nature of the Job Market, 3) Perceived Faculty Staffing Needs, and 4) Preparation of Two-Year College Math Faculty. These areas parallel the four major parts of the distributed questionnaire. All reference tables can be found under Appendix B.

## *Part I General Information*

Table B1 is a grid comparing the number of full-time faculty employed during the Fall, 1984 (horizontal axis) with the Fall, 1985 (vertical axis). The body of the table contains the number of institutions falling into each category. This indicates that there was a slight increase in the number of full-time faculty between '84 and '85. Table B2 contains the same information for part-time faculty: comparing Fall '84 with Fall '85.

The ratio of part-time to full-time faculty changed little from Fall '84 to Fall '85. Among the institutions surveyed, the (arithmetic) mean ratio was 1.53 (i.e., 1.53 adjuncts for every full-time faculty member) and a median of 1.06 for Fall '85: a mean of 1.49 with a median of 1.19 for Fall '84.

The regular full-time faculty load averaged 15-16 credits per term. The average load was not related to the size or location of the institution.

Table B3 shows the number of institutions responding to the category of percent of faculty teaching overloads during the '85 calendar year. This again was neither related to the size nor type of the institution.

Clearly most (75%) institutions are employing overloads in some form or another.

In response to the question, "What percent of your adjuncts teach 1-3, 4-6, 7-9, 10-12, 13-15 and 16+ credits per term?", 31% of the 197 respondents reported that over half their adjunct faculty teach 1-3 credits; 36% reported that over half their adjunct faculty teach 4-6 credits; 5% reported over half their adjunct faculty teaching 7-9 credits; 1.5% reported over half their adjuncts teaching either 10-12 or 13-15 credits and .5% reported over half their adjuncts teaching 16 or more credits. Thus, the majority of responding institutions employ most of their adjuncts to teach between 1 and 6 credits.

## *Part II The Nature of the Job Market*

### Full-Time Faculty

Altogether, 142 of 236 (60%) respondents indicated that their institution had full-time openings with 59 institutions looking to fill positions announced vacant as of January 1985.

For positions vacant as of January '85, there were 59 searches for 69 full-time positions: 49 institutions were attempting to fill one opening and 10 institutions were attempting to fill two openings. The breakdown by major (and other qualifications) as well as degree sought is provided in Table B4.

The predominantly desired degree sought for the positions was the Masters Degree in Mathematics (59), followed by the Ph.D. (3), the Bachelors Degree (3), and no degree listed except for maybe "knows calculus" (4).

The majority of institutions reported few problems in receiving an adequate number of applicants for positions. Table B5a contains the number of applications broken down by major (as sought by institution) for institutions with one opening seeking a candidate with a Masters Degree as of January 1985. Table B5b contains the percent of applicants meeting department qualifications by major for institutions with one or two vacancies requiring a Masters Degree. The percent of applicants meeting their qualifications was related to degree. For institutions requiring Masters Degrees, 14% reported having 10% or less meeting their stated qualifications, 52% reported having 11-50% of the applications meeting their requirements, and 34% reported that at least half the applicants met their requirements. As would be expected, the few institutions requiring Doctorates had lower proportions, and the few requiring degrees less than the Masters Degree had higher proportions meeting their requirements.

Table B6 contains the status of the 69 vacant positions as of January '85. Of the 69 openings, 59 were filled with applicants who met the department's qualifications, 3 were filled with applicants who had less than their stated qualifications, 4 remained unfilled and 3 did not respond.

A high proportion of the applicants were retirees and teachers from public schools, followed by graduate students and teachers from other colleges.

Only 15% of the 59 respondents offered a position which was turned down by a candidate.

The median age of those hired (63 respondents) was 36: the median number of years experience teaching math in college of those hired (59 respondents) was 3.2 years.

Table B7 contains the breakdown of responses to the question, "How many full-time mathematics faculty have left the department in the last three years?" and "By the end of the '85 calendar year, will all individuals have been replaced?". The average age of those leaving was 47.8 years (107 respondents).

Twenty-one percent (22/107) of the colleges losing one or more full-time faculty members in the last 3 years will not have replaced them by the end of the '85-'86 academic year. Various reasons were given for not filling the positions: 59% cited budget restrictions, 23% indicated

that the position was unnecessary due to enrollment, 9% reported lack of success in finding qualified individuals, and 9% mentioned other reasons.

**Part-Time Faculty**

Qualifications for adjuncts were similar to those of full-time faculty. Table B8 displays the distribution of responses to the question, "What percent of your adjuncts meet your qualifications?".

When asked if they were able to find the number of qualified adjuncts they had originally planned for (before the term began), 39 out of 206 (19%) respondents reported negatively: 7 of the 39 responded that they did not have sufficient time to find adjuncts, 23 of the 39 that there were not enough qualified individuals, and 3 simply that they divided the courses among the full-time faculty.

***Part III Perceived Faculty Staffing Needs***

The data indicate that for the '85-'86 academic year, few problems were experienced in finding qualified personnel to fill the open positions. With regard to the number of qualified applicants, the opinions expressed by department chairs in this section (see Table B9a) reflected the data collected with regard to this issue in Part II of this questionnaire. Most colleges having faculty vacancies in the last few years reported that they were receiving a sufficient number of applicants (74%) and cited geographic location as the primary reason why they have no difficulty. On the other hand, the remaining 26% reported that they were not receiving enough applications for these positions and cited salary as their primary problem. Forty one percent of all respondents felt that there was a national shortage of qualified full-time math teachers whereas 56% felt there was not (see Table B10). Interestingly enough, both groups cited the number of applications and media accounts as reasons to support their point of view. In reference to those who did perceive such a shortage, 67% believe the cause to be that of low salaries (see Table B11). Furthermore, 79% of the respondents cited higher pay for all teachers as the possible solution for the shortage (see Table B12).

On the surface, the profile of adjunct faculty seems similiar to that of full-time faculty. There was little change in the number of adjuncts employed from '84 to '85. Where 65% of the respondents felt that they had sufficient numbers of applicants for adjunct positions, 32% felt that they had not (see Table B9b). Again, 41% of the total felt there was a national shortage of adjunct faculty while 53% felt that there was not (see Table B10). The number of qualified applicants was mentioned by both groups as reason to support their point of view. However, 31% of the Mathematics Departments reported hiring adjuncts that did not meet their desired

qualifications in contrast to the full-time faculty profile where only 5% of newly hired faculty lacked the institutions stated qualifications

One hundred seventy-one institutions (92% of the respondents) indicated that their faculty regularly carry overloads. Four reasons were cited as to why faculty carry overloads: 49% of the chairs reported that their faculty desired overloads, 39% reported that there were not enough funds available to support more full-time positions, 25% mentioned that they were unable to find qualified individuals to teach certain courses, and 22% mentioned that overloads allow more flexibility in anticipating enrollment fluctuations.

The majority (65%) of the department chairs believe that there has been no increase in the ratio of part-time to full-time faculty members over the last few years. This was borne out in the data presented in Part I. Of those respondents who do believe there to have been an increase (33%), most support the view that the quality of instruction, course standards, and quality of student advising has not changed as a consequence of the increase in the ratio.

## *Part IV Preparation of Two-Year College Math Faculty*

In reference to the question, "What degrees do your full-time members currently hold?", 47% of the departments reported that over half of their faculty members hold a Masters Degree in Mathematics as their highest degree. Twelve percent reported that over half of their full-time staff members hold a Masters in Mathematics Education, while 1% reported that over half of their full-time staff members hold a Masters in Education. It was also found that 3% of the responding departments had more than half of its members holding a Ph.D. in Mathematics.

Along these same lines, but with the adjunct population, it was found that 10% of the respondents reported that the majority of their adjunct staff members hold a Masters in Education, 16% reported the majority of their adjuncts hold a Masters in Mathematics Education and 25% reported the majority of their adjuncts hold a Masters in Mathematics. Two percent of the insititutions reported maintaining the majority of their adjunct members holding Ph.D.'s in Mathematics. However, a significant 16% of the institutions reported that the majority of their adjunct faculty members hold degrees other than Mathematics.

In response to the question of whether most courses in the curriculum rotate to each member of the department, 66% of the chairs rotate most courses while 34% do not. Sixty-two percent of certain department members specialize in a specific segment of the curriculum while 39% do not.

The three most frequently cited areas of preparation perceived by department chairs to be necessary for teaching math in a two-year college are: applied math, mentioned by 84% of the respondents; remedial math, mentioned by 66% of the respondents; and advanced math theory, mentioned by 64% of the respondents.

Thirty-one percent of the departments feel that at least half of their full-time and part-time staff need some training or re-training to make them more professionally effective.

## Conclusions and Recommendations

The information collected in this survey indicates that there was a degree of stability in the numbers of faculty employed in two-year colleges between Fall '84 and Fall '85 - for both full-time and part-time faculty. Some faculty are leaving for the usual reasons (retirement, jobs elsewhere, etc.); others are being found to take their place. While few institutions have reported any real difficulty in finding individuals who meet their stated qualifications for full-time positions, both the hard data and the opinions and comments of department chairs indicate that there does not seem to be a glut of qualified candidates on the market. No surprises were uncovered with regard to the preparedness of Mathematics faculty in Two-Year Colleges. In general, department personnel were fully qualified with the predominant degree being at least Masters in Mathematics or Mathematics Education.

The picture is less sanguine with regard to part-time faculty. The data and opinion seem to indicate that there were some problems finding qualified personnel and many institutions were opting to hire less than qualified personnel for some of those positions. The preparation statistics on part-time personnel seem to coincide with the hiring practices - some of the part-time faculty employed were simply not qualified.

When asked directly if department chairs felt that there was a national shortage of qualified full or part-time two-year college math faculty, opinions were split close to the middle. This leads us to an ambiguous interpretation. Since enough department chairs seem to believe that there is a shortage we choose to interpret this as some cause for concern. We, therefore, recommend that AMATYC continue to monitor the pool of prospective part-time and full-time candidates to help in identifying a clear trend.

# *Appendix A*

## PART I. GENERAL INFORMATION

### COLLEGE CHARACTERISTICS

1 Type of institution
- a __ public two-year college
- b __ private two-year college
- c __ other (please list) _____

2 Approximately how many undergraduate students attended your college in Fall '85?

_____

3 How would you characterize the location of your institution?
- a __ urban
- b __ suburban
- c __ rural
- d __ other (please list) _____

### MATHEMATICS DEPARTMENT CHARACTERISTICS

4 Please provide the following information for the '85-86 academic year (exclude summer)

| | | | If applicable | |
|---|---|---|---|---|
| | Term 1 | Term 2 | Term 3 | Term 4 |
| Fill in the term | Fall 85 | _____ | _____ | _____ |
| a Student enrollment in math department courses | _____ | _____ | _____ | _____ |
| b Number of full-time math faculty | _____ | _____ | _____ | _____ |
| c Number of adjunct math faculty | _____ | _____ | _____ | _____ |

5 If possible, please provide the following information for the '84-85 academic year for terms paralleling those filled in question 4 (exclude summer)

| | | | If applicable | |
|---|---|---|---|---|
| | Term 1 | Term 2 | Term 3 | Term 4 |
| Fill in the term | Fall 82 | _____ | _____ | _____ |
| a Student enrollment in math department courses | _____ | _____ | _____ | _____ |
| b Number of full-time math faculty | _____ | _____ | _____ | _____ |
| c Number of adjunct math faculty | _____ | _____ | _____ | _____ |

6 What is the regular full-time faculty load for the '85-86 academic year in the mathematics department?

_____ credit hours per faculty member

Does this number include summers? __ Yes __ No

7 a How many of your full-time faculty taught overloads during the '85-86 academic year?

_____

b What was the (departmental) total of overload credit hours taught by your full-time faculty during the '85-86 academic year?

_____ credit hours

8 Please indicate for the '85-86 academic year, the number of adjunct faculty teaching the indicated course loads (exclude summer)

Number of adjuncts teaching

| | | | If applicable | |
|---|---|---|---|---|
| | Term 1 | Term 2 | Term 3 | Term 4 |
| Fill in the term | _____ | _____ | _____ | _____ |
| a 1-3 credit hours | _____ | _____ | _____ | _____ |
| b 4-6 credit hours | _____ | _____ | _____ | _____ |
| c 7-9 credit hours | _____ | _____ | _____ | _____ |
| d 10-12 credit hours | _____ | _____ | _____ | _____ |
| e 13-15 credit hours | _____ | _____ | _____ | _____ |
| f 16 or more credit hours | _____ | _____ | _____ | _____ |

PART II. THE NATURE OF THE JOB MARKET

The following questions refer to FULL-TIME MATHEMATICS FACULTY ONLY

1 When did the mathematics department last conduct a search to fill a full-time faculty position?

Search begun _____(month/yr.) to fill an opening starting _____(month/yr.)

a How many openings did you try to fill at that time?

_____

b Please list the qualifications sought for the position(s) ( List only different positions separately. )

| | Position 1 | Position 2 | Position 3 |
|---|---|---|---|
| Title | _____ | _____ | _____ |
| # of openings for each position | _____ | _____ | _____ |
| Qualifications sought | _____ | _____ | _____ |
| | _____ | _____ | _____ |
| | _____ | _____ | _____ |
| | _____ | _____ | _____ |

c. About how many applications were received for each different position?

___position 1 ___position 2 ___position 3

d. About what percent of those applications reviewed met all the qualifications as listed above?

___position 1 ___position 2 ___position 3

e. How many openings did you actually fill with those that met the qualifications?

___position 1 ___position 2 ___position 3

f. How many openings were filled by those who did not meet your original qualifications?

___position 1 ___position 2 ___position 3

g. Pertaining to the last search, please fill in the appropriate number of openings.

_____openings were filled before the desired starting date
_____openings were filled within 6 months after the desired starting date
_____openings were filled between 6 months and a year after the desired starting date
_____openings were filled between 1-2 years after the desired starting date
_____openings were left unfilled as of the current term.
_____other (please list) _____

2. If possible, in your most recent search, about what percent of the applicants at the time of your search were (categories may overlap)

_____full-time graduate students
_____public (secondary) school teachers
_____private (secondary) school teachers
_____ from industry
_____teachers from another college
_____retirees
_____ other (please list)
_____
_____
_____

3. In your most recent search did you offer a position to someone who declined to accept it?

___Yes ___No

If your response was yes, what were the reasons for their refusal?

___another college offer
___industry offer
___working conditions (please specify)
_____
_____
___geographical location of college
___salary
___other (please list)
_____
_____
_____

4 a. Approximately how old were the individuals hired in the last search at the time of hiring?

_____ _____ _____ _____ _____

b. Approximately how many years experience teaching mathematics in college did the newly hired individuals have at the time of hiring?

_____ _____ _____ _____ _____

5 a. How many full-time mathematics faculty have left the department in the last three years?

_____

b. Why did the individuals leave?

Fill in the number of people in each category

____death

____retirement

____transfer to another college

____return to school

____join industry

____other (please list)

_____
_____
_____

c. Approximately how old were the individuals at the time they left?

_____ _____ _____ _____ _____
_____ _____ _____ _____ _____

d. Approximately how many years experience teaching mathematics in college did the individuals have at the time they left?

_____ _____ _____ _____ _____
_____ _____ _____ _____ _____

e. By the end of the '85-86 academic year, will all the individuals have been replaced?

__Yes __No

If your response was no, why not?

___budgetary restrictions

___position unnecessary due to enrollment

___lack of success in finding a qualified individual

___other (please list)

_____
_____
_____

Questions 6 and 7 refer to MATHEMATICS DEPARTMENT ADJUNCTS ONLY FOR THE '85-86 ACADEMIC YEAR

6 a. What are the qualifications desired for adjuncts?

_____
_____
_____
_____

b. How many of your adjuncts met all the desired qualifications?

If applicable

_____ Term 1 _____Term 2 _____Term 3 _____Term 4

c. About what percent of the adjuncts come from each of the following categories?

___nearby graduate school
___nearby four-year colleges/universities
___other two-year colleges
___public (secondary) schools
___private (secondary) schools
___industry
___retirement
___other (please list)
_____
_____
_____

7. a. Were you able to get the number of qualified adjuncts you had originally planned for, before the terms began?

_____ Yes _____ No

If your response was yes, go on to PART III.

b. If your response was no, why not?

____ last minute course additions left insufficient time to find qualified adjuncts
____ not enough qualified adjuncts available
____ budgetary restrictions
____ other (please list)
_____
_____
_____

c. If your response was no, what did you do?

____cancelled the courses even though there was a demand
____cancelled the courses since there was no demand anyway
____allowed less qualified individuals to teach the courses
____divided the uncovered courses among adjunct faculty
____divided the uncovered courses among full-time faculty as overloads
____other (please list)
_____
_____
_____

## PART III. FACULTY STAFFING NEEDS - OPINION

1. For this question, please answer either part a or part b.
a. If you have not been receiving a sufficient number of qualified applicants for full-time positions, please rank the possible reasons. (1 = highest)

____status of the profession
____salary
____working conditions (please specify)
_____
_____
____geographical location of college
____courses to be taught
other (please list)
___ _____
___ _____
___ _____

b If you have been receiving a sufficient number of applicants for full-time positions, please rank the possible reasons (1 = highest)

____status of the profession
____salary
____geographical location of college
____working conditions (please specify)
_____
_____
____courses to be taught
____love of teaching
____flexible hours
other (please list)
____ _____
____ _____
____ _____

2 For this question, please answer either part a or part b.

a If you have not been receiving a sufficient number of qualified applicants for adjunct positions, please rank the possible reasons. (1 = highest)

____status of the profession
____salary
____working conditions (please specify)
_____
_____
____geographical location of college
____courses to be taught
other (please list)
____ _____
____ _____
____ _____

b If you have been receiving a sufficient number of applicants for adjunct positions, please rank the possible reasons (1 = highest)

____status of the profession
____salary
____geographical location
____working conditions (please specify)
_____
_____
____courses to be taught
____love of teaching
____flexible hours
other (please list)
____ _____
____ _____
____ _____

3 a Do you believe there is currently a national shortage of full- or part-time two-year college mathematics teachers?

| | Yes | No |
|---|---|---|
| Full-time | ____ | ____ |
| Part-time | ____ | ____ |

b What indicators cause you to hold such beliefs?

_____
_____
_____
_____

c If you answered yes to any part of question 3a, what do you think is the cause of the shortage?

_____
_____
_____
_____
_____

d If you believe there is a shortage what are some possible solutions?

___differential pay

___higher pay for all teachers

___longer contract period

___cooperative agreements with industry

other (please list)

_____
_____
_____
_____

4 If overloads are regularly carried by your faculty, what are the primary reasons?

_____not enough funds are available to support more full-time positions

_____unable to find qualified individuals to teach certain courses

_____allows more flexibility in anticipating enrollment fluctuations

_____other (please list)

_____
_____
_____
_____

5 Has there been an increase in the ratio of part-time to full-time faculty in your department over the last 3 years? _____Yes ___No

If your answer to the above is no, skip the remainder of this section and go on to section IV

If your answer to the above is yes, which of the following do you believe is a consequence of the increase?

a The quality of instruction in classes has

_increased _not changed _decreased _no opinion

b The course standards in the math department have

_increased _not changed _decreased _no opinion

c Students believe that the math course standards have

_increased _not changed _decreased _no opinion

d The quality of student advising has

_increased _not changed _decreased _no opinion

6 Additional comments on the effects that the increase in the ratio of part- to full-time faculty has had on your department

Instruction

_____
_____
_____
_____

Advising

_____
_____
_____
_____

Administration

_____
_____
_____
_____

Other

_____
_____
_____

## PART IV. PREPARATION OF TWO-YEAR COLLEGE MATH FACULTY

1 How many full-time members of your department currently hold the following degrees? (If more than one degree, please list the most advanced.)

____Masters in Education

____Masters in Math Education

____Masters in Mathematics

____Ed D.

____D.A. in Mathematics

____Ph.D. in Mathematics

Other (please list)

____ _____
____ _____
____ _____

2 How many adjunct faculty members of your department hold the following degrees? (If more than one degree, please list the most advanced.)

_____Masters in Education

_____Masters in Math Education

_____Masters in Mathematics

_____Ed D

_____D.A. in Mathematics

_____Ph. D

Other (please list)

_____ _____
_____ _____
_____ _____

3 Do most courses in the curriculum rotate to each member of the department?

___Yes ___No

4 Are certain department members specialists in any specific segment of the curriculum?

___Yes ___No

If yes, please list the areas of specialty

_____ _____
_____ _____
_____ _____
_____ _____

5 Put an X next to what you believe to be the five most important areas of preparation needed for teaching mathematics in a two-year college

___advanced mathematical theory
___applied mathematics
___physical sciences
___business/economics/accounting
___computer theory
___computer languages
___learning theory
___post-secondary practicum
___educational theory of teaching methods
___pure statistics
___educational measurement
___technical applications
___remedial mathematics teaching
other (please list)

___ _____
___ _____
___ _____
___ _____

6 What graduate courses do you believe are most helpful for the professional development of two-year college math faculty?

_____
_____
_____
_____
_____
_____

7 We are interested in locating those universities or colleges which offer programs or courses specifically designed for preparing two-year college mathematics teachers. If you know of any colleges or universities which offer such programs or courses, please list them below

| College | Program or course |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

8 a Approximately what percent of the faculty in your department do you believe are in need of some retraining (or training) to make them more effective professionally?

Full-time _____
Part-time _____

b In what area(s) do you believe your full-time faculty is most in need of retraining (or training) for professional development? Assign a percent to the faculty who need retraining (or training) in the area

___advanced mathematical theory
___applied mathematics
___physical sciences
___business/economics/accounting
___computer theory
___computer languages
___learning theory
___post-secondary practicum
___educational theory of teaching methods
___pure statistics
___educational measurement
___technical applications
___remedial mathematics teaching
other (please list)
___ _____
___ _____
___ _____
___ _____

**PART V. RESPONDENT**

Name _____

Title _____

College _____

College Address

_____
_____
_____
_____

Telephone number _____

Thank you very much for taking the time to respond to this survey

Please return to

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# *Appendix B*

*Table B1*

***Number of Institutions Categorized by the Number of Full-Time Faculty: Fall '85 vs. Fall '84***

Number of full-time faculty: Fall '84

Number of full-time faculty: Fall '85

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 20 | 21 | 23 | 26 | 28 | 29 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 7 | 14 | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 7 | 2 | 28 | 1 | | | | | | | | | | | | | | | | | | | | | |
| 3 | 8 | | 2 | 27 | 2 | | | | | | | | | | | | | | | | | | | | |
| 4 | 3 | | | 4 | 11 | 1 | | | | | | | | | | | | | | | | | | | |
| 5 | 3 | | | | 2 | 10 | | | | | | | | | | | | | | | | | | | |
| 6 | 1 | | | | | 4 | 11 | 2 | | | | | | | | | | | | | | | | | |
| 7 | 1 | | | | | | 3 | 7 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | 3 | 8 | 1 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | 2 | | | 1 | | | | | | | | | | | | |
| 10 | | | | | | | | | | 2 | 3 | 1 | | | 4 | | 1 | | | | | | | | |
| 11 | | | | | | | | | | | 1 | 8 | 1 | | 1 | | | 1 | | | | | | | |
| 12 | | | | | | | | | | | 1 | | 3 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | 4 | 4 | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | 1 | 1 | 2 | 1 | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | 2 | | 1 | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | 1 | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | | | | | | | | | | | |

*Table B2*

***Number of Institutions Categorized by the Number of Part-Time Faculty: Fall '85 vs. Fall '84***

Number of part-time faculty: Fall '84

Number of part-time faculty: Fall '85

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 20 | 22 | 23 | 24 | 25 | 28 | 30 | 31 | 34 | 35 | 38 | 44 | 47 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 29 | 3 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 9 | 14 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 1 | 5 | 19 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 3 | 1 | 2 | 3 | 3 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 3 | | 1 | 1 | 6 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 2 | | | | 1 | 2 | 2 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 3 | | | | | 1 | 7 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 1 | | | 1 | 2 | | 1 | 3 | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | 4 | 3 | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | 3 | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | 1 | | | | | | 4 | 2 | | | | | | | | | | | | | | | | | | | | | |
| 11 | 1 | | | | 1 | | | | 1 | | 1 | 3 | 1 | 1 | | | | | | | | | | | | | | | | | | | |
| 12 | 1 | | | | | | | | | | 1 | 2 | 3 | 1 | 1 | 2 | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | 1 | | | | 1 | | 1 | | | | | | | | | | | | | | | | |
| 14 | 1 | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | |
| 15 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | 2 | | | 1 | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | 1 | | | | | | 2 | 1 | 1 | | | | | | | | | | | | |
| 19 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 1 | | | | | | | | | | | | | | | 1 | | | | 1 | 1 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | 1 | | 2 | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| 26 | | | | | | | | | | | | | | | | | | | | | | 1 | | 2 | | | | | | | | | |
| 27 | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | | | | |
| 28 | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | |
| 33 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | |
| 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| 38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | |
| 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| 47 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| 53 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| 70 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |

*Table B3*

*Percent of Full-Time*
*Faculty Teaching Overloads for the '85 Calendar Year*

*(n = 228)*

| Percent of full-time faculty teaching overloads | Number of institutions responding to each category | Percent of Institutions |
|---|---|---|
| 0 | 57 | 25.0% |
| 1 - 10% | 2 | 1.0% |
| 11 - 20% | 8 | 3.5% |
| 21 - 30% | 9 | 3.9% |
| 31 - 40% | 15 | 6.5% |
| 41 - 50% | 26 | 11.4% |
| 51 - 60% | 5 | 2.2% |
| 61 - 70% | 15 | 6.6% |
| 71 - 80% | 19 | 8.3% |
| 81 - 90% | 12 | 5.3% |
| 91 - 100% | 60 | 26.3% |

*Table B4*

*Number of Institutions Categorized by Degree, Major and Other Qualifications Sought for Positions Vacant as of January 1985*

*(n = 59)*

| MAJOR & QUALIF. | DEGREE | | | | TOTALS |
|---|---|---|---|---|---|
| | Bachelors | Masters | Doctorate | None Specified | |
| Mathematics | 2 | 41 | 1 | | 44 |
| Math & Comp Sci. | 1 | 8 | | | 9 |
| Math & Good Attitude | | 2 | 1 | | 3 |
| Chemistry | | 1 | | | 1 |
| Math & Remedial | | 3 | | | 3 |
| Statistics | | 4 | | | 4 |
| Calculus | | | | 2 | 2 |
| Engineering | | | | 2 | 2 |
| None Specified | | | 1 | | 1 |
| | 3 | 59 | 3 | 4 | 69 |

*Table B5a*

***Number of Institutions Categorized by Number of Applicants Received for a Full-Time Position and by Required Major (For Institutions Seeking to Fill One Vacancy by a Candidate with a Masters Degree)***

***(n = 41)***

| | *Major* | | | | | |
|---|---|---|---|---|---|---|
| | Math | Math &/or Comp Sci. | Math &/or Chemistry | Math & Remed. Exp. | Math &/or Statistics | Row Totals |
| 0 | 1 | | | | | 1 ( 2%) |
| 1 - 5 | 3 | 2 | | | | 5 (12%) |
| 6 - 10 | 8 | | | | | 8 (20%) |
| 11 - 20 | 5 | 1 | | | 2 | 8 (20%) |
| 21 - 30 | 2 | | | | 1 | 3 ( 7%) |
| 31 - 40 | 4 | | | | | 4 (10%) |
| 41 - 50 | 3 | | 1 | | 1 | 5 (12%) |
| 51 - 60 | 4 | | | | | 4 (10%) |
| 61 - 70 | 1 | | | 1 | | 2 ( 5%) |
| 81 - 90 | | 1 | | | | 1 ( 2%) |
| Column Totals | 31 (76%) | 4 (10%) | 1 (2%) | 1 (2%) | 4 (10%) | 41 |

*Table B5b*

***Number of Institutions Categorized by Percent of Qualified Applicants Seeking Full-Time Positions and by Required Major***
***(For Institutions Seeking One or More Candidates with a Masters Degree)***

***(n = 50)***

| Percent meeting Qualifications | Math | Math &/or Comp Sci. | Math &/or Chemistry | Math & Remed. Exp. | Math &/or Math Ed. | Math &/or Statistics | Row Totals |
|---|---|---|---|---|---|---|---|
| 0% | 2 | 1 | | | | | 3 ( 6%) |
| 1 - 10% | 3 | | | | | 1 | 4 ( 8%) |
| 11 - 20% | 7 | 1 | | | | | 8 (16%) |
| 21 - 30% | 4 | | | 1 | 2 | | 7 (14%) |
| 31 - 40% | 2 | 1 | | | | | 3 ( 6%) |
| 41 - 50% | 6 | 1 | | | 1 | | 8 (16%) |
| 51 - 60% | 2 | 1 | 1 | | | | 4 ( 8%) |
| 61 - 70% | 1 | | | | | | 1 ( 2%) |
| 71 - 80% | 6 | | | 1 | 1 | | 8 (16%) |
| 81 - 90% | 2 | | | | | | 2 ( 4%) |
| 91 - 100% | 1 | 1 | | | | | 2 ( 4%) |
| Column Totals | 36 | 6 | 1 | 2 | 4 | 1 | 50 (100%) |

MASTERS DEGREE

*Table B6*

*Status of Positions Announced Vacant after January 1985**

| | Positions filled by applicants meeting qualifications | Positions filled by applicants having less than the stated qualifications |
|---|---|---|
| Bachelors | 3 | 0 |
| Masters | 42 | 2 |
| Doctorate | 2 | 0 |
| No Degree Specified | 2 | 1 |
| | 49 positions | 3 positions |

*4 remain unfilled; 3 did not respond

*Table B7*

*Faculty Attrition and Replacement*

*(n = 236)*

| Number of faculty who left the dept. in the last 3 years | Number of Institutions Responding | Percent of Institutions | Number of Institutions which did NOT replace all individuals by the '85 calendar year |
|---|---|---|---|
| 0 | 83 | 35% | 0/83 |
| 1 | 67 | 28% | 6/67 (9% of those losing 1) |
| 2 | 23 | 10% | 9/23 (39% of those losing 2) |
| 3 | 12 | 5% | 5/12 (42% of those losing 3) |
| 4 | 3 | 1% | 0/3 (0% of those losing 4) |
| 5 | 1 | 0% | 1/1 (100% of those losing 5) |
| 6 | 1 | 0% | 1/1 (100% of those losing 6) |
| No Response | 46 | 20% | |

*Table B8*

***Percent of Adjuncts Meeting Job Qualifications***

***(n = 206)***

| Percent Meeting Qualifications | Number of Institutions | Percent of Institutions |
|---|---|---|
| 1 - 10% | 3 | 1.5% |
| 11 - 20% | 3 | 1.5% |
| 21 - 30% | 4 | 1.9% |
| 31 - 40% | 3 | 1.5% |
| 41 - 50% | 16 | 7.8% |
| 51 - 60% | 2 | 1.0% |
| 61 - 70% | 9 | 4.4% |
| 71 - 80% | 12 | 5.8% |
| 81 - 90% | 12 | 5.8% |
| 91 - 100% | 117 | 56.8% |
| No Response | 25 | 12.1% |

*Table B9a*

***Ranking of Possible Reasons for :***

***Institutions Not Receiving a Sufficient Number of Qualified Applicants for Full-Time Positions***

***(n = 48)***

| | | | |
|---|---|---|---|
| 1st | Salary | 30 | (63%) |
| 2nd | Status | 14 | (29%) |
| 3rd | Geographic location | 10 | (21%) |

***Institutions Receiving a Sufficient Number of Qualified Applicants for Full-Time Positions***

***(n = 139)***

| | | | |
|---|---|---|---|
| 1st | Geographic location | 40 | (29%) |
| 2nd | Love of teaching | 22 | (16%) |
| 3rd | Flexible hours | 22 | (16%) |

*Table 9b*

***Ranking of Possible Reasons for :***

***Institutions Not Receiving a Sufficient Number of Qualified Applicants for Part-Time Positions***

***(n = 61)***

| | | | |
|---|---|---|---|
| 1st | Salary | 12 | (20%) |
| 2nd | Salary | 12 | (20%) |
| 3rd | Status | 10 | (16%) |

***Institutions Receiving a Sufficient Number of Qualified Applicants for Part-Time Positions***

***(n = 129)***

| | | | |
|---|---|---|---|
| 1st | Geographic location | 34 | (27%) |
| 2nd | Flexible hours | 23 | (19%) |
| 3rd | Courses Taught | 23 | (19%) |

*Table B10*

*Institutions Responding to the Question, "Do you believe there is currently a shortage of full-time or part-time two-year college mathematics teachers?"*

*(n = 236)*

| Part-Time \ Full-Time | yes | no |
|---|---|---|
| yes | 41% | 56% |
| no | 41% | 53% |

*Table B11*

*The Department Chair's Perceived Causes of Two-Year Faculty Shortage Among Either Part-Time or Full-Time Populations*

*(n = 103)*

| | | |
|---|---|---|
| Salary | 69 | (67%) |
| Competition among colleges | 37 | (36%) |
| Respect for field (or lack of) | 7 | ( 7%) |
| Geographical location of school | 5 | ( 5%) |
| Quality of applicants | 5 | ( 5%) |

*Table B12*

*The Department Chair's Suggestions for Alleviating a Two-Year College Faculty Shortage*

*(n = 121)*

| | | |
|---|---|---|
| Higher pay for all teachers | 96 | (79%) |
| Differential pay | 56 | (46%) |
| Cooperative agreements with industry | 35 | (29%) |
| Longer contract period | 20 | (17%) |



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